

NEW SPECIES OF MICRO-CADDISFLIES  
(TRICHOPTERA: HYDROPTILIDAE) FROM NEW CALEDONIA,  
VANUATU AND FIJI

ROBERT W. KELLEY

Biologist, Enwright Laboratories, 25 Woods Lake Rd., Greenville, South Carolina 29607.

---

*Abstract.*—New species of micro-caddisfly genera *Oxyethira* Eaton, *Paroxyethira* Mosely, *Acricoptila* Wells and *Caledonotrichia* Sykora are described from the South Pacific islands of New Caledonia, Vanuatu (Efate) and Fiji. Range extensions of genera *Paroxyethira* and *Acricoptila* are included and a new subgenus, endemic to New Caledonia, is added to the genus *Oxyethira*.

*Key Words:* caddisfly, new species, New Caledonia, Hydroptilidae

---

Numerous species of micro-caddisflies have been reported from the Australasian biogeographic region. Wells has noted a total of 12 micro-caddisfly genera from Australia: *Hydroptila* Dalman, *Oxyethira* Eaton, *Orthotrichia* Eaton, *Orphnino-trichia* Mosely, *Maydenoptila* Neboiss, *Xuthotrichia* Mosely, *Hellyethira* Neboiss, *Austratrichia* Wells, and *Tricholeiochiton* (Kloet & Hincks). Only two hydroptilid genera, *Oxyethira* and *Paroxyethira*, are known from New Zealand and one genus, *Caledonotrichia* Sykora, from New Caledonia. Genera of the tribe Hydroptilini Stephens seem to be the predominant micro-caddisflies in the region. An examination of material from the Bishop Museum in Hawaii revealed previously unpublished species of four established hydroptilid genera on the Melanesian islands of New Caledonia, Efate (Vanuatu) and Fiji.

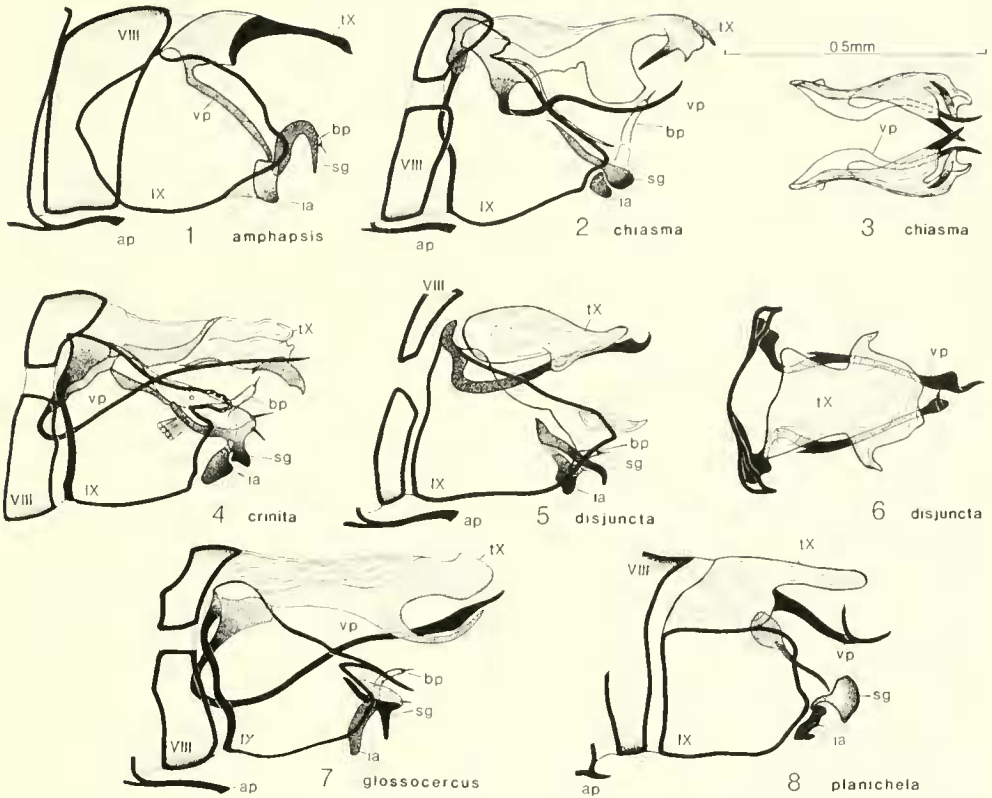
Described from New Caledonia are five new species of *Oxyethira*, two new species of *Caledonotrichia* and six new species of *Acricoptila*. This brings to 17 the number of species, distributed among four genera, of micro-caddisflies known from the island.

One new species of *Oxyethira* is described from Vanuatu and one from Fiji. These discoveries extend the range of *Oxyethira* to include Melanesia, of *Paroxyethira* to include New Caledonia as well as New Zealand, and of *Acricoptila* which was previously considered endemic to Australia. New species of *Oxyethira* from Melanesia include species in the subgenus *Trichoglene* Neboiss and a new subgenus, *Pacifica*. The collections also showed a high incidence of endemism at the species level in New Caledonia. The length and number of antennal segments were unavailable for several species. All type specimens are deposited in the Bishop Museum in Hawaii.

**Genus *Acricoptila* Wells, 1982**

*Type species:* *Acricoptila globosa* Wells, 1982, by original designation.

Six New Caledonian species of the genus *Acricoptila* are described below. This genus in the *Hellyethira* complex of genera, was previously known only from Australia, with two species in Western Australia and one species in Queensland. The males of these

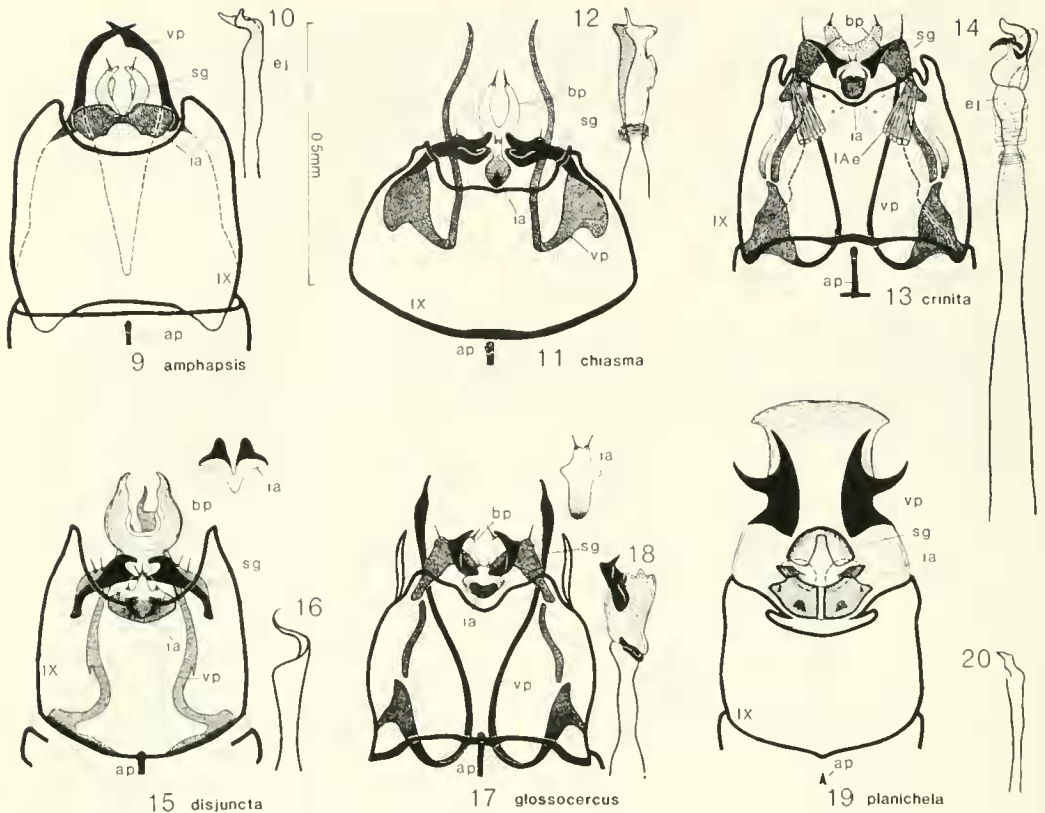


Figs. 1-8. Male terminalia of *Acritoptila* Wells, lateral and dorsal views. *A. amphapsis*: 1, lateral; 2, lateral; 3, tergum X (dorsal). *A. crinita*: 4, lateral. *A. disjuncta*: 5, lateral; 6, tergum X (dorsal). *A. glossocercus*: 7, lateral. *A. planichela*: 8, lateral. ap, apico-mesal process; bp, bilobed process; ia, inferior appendages; sg, subgenital processes; tX, tergum X; vp, ventrolateral process.

new species share with the Australian species of the genus, fused inferior appendages (Fig. 17); a complex tergum X with spines and projections (Fig. 3) and long rod-like processes (Fig. 7), described as parameres by Wells (1982), projecting from the lateral margin of tergum X. In most of the new species the fusion of the inferior appendages is more complete than in the Australian species. Females, although not described here, share with the *Hellyethira* generic complex shortened apodemes on segments VIII and IX. The spur formula, wing venation and other characters of the new species are consistent with the generic description by Wells (1982).

*Acritoptila amphapsis*,  
NEW SPECIES  
Figs. 1, 9, 10

Male.—Length 2.7 mm. Segment VII: apico-mesal process of venter elongate. Segment IX: pleuron produced into blunt posterior lobe; venter excised anteriorly and posteriorly. Segment X: dorsum split near base into sclerotized processes which converge at apices; ventrolateral processes reaching base of subgenital processes. Inferior appendages: truncate, joined by narrow bridge. Subgenital processes: convergent, arch-shaped in lateral view. Aedeagus (Fig. 10): elongate, bifurcate apically.



Figs. 9–20. Male terminalia of *Acritoptila* Wells, aedeagus and ventral views. *A. amphapsis*: 9, ventral; 10, aedeagus. *A. chiasma*: 11, ventral; 12, aedeagus. *A. crinita*: 13, ventral; 14, aedeagus. *A. disjuncta*: 15, ventral with inset of caudal view of inferior appendages; 16, aedeagus. *A. glossocercus*: 17, ventral; 18, aedeagus. *A. planichela*: 19, ventral; 20, aedeagus. ap, apico-mesal process; bp, bilobed process; ej, ejaculatory duct; ia, inferior appendages; IAe, inferior appendage extensor muscle; sg, subgenital processes; vp, ventrolateral processes.

Female.—Unknown.

Etymology.—Named for the arch-shaped subgenital processes.

Holotype.—Male. New Caledonia: Honailu River, 26 Oct. 1958, C. R. Joyce.

Paratypes.—None.

Diagnosis.—The semi-fused inferior appendages (Fig. 9) and relatively short ventrolateral lobes of tergum X (Fig. 1) are more similar to male genitalia of the Australian *Acritoptila* than to the genitalia of other New Caledonian species.

*Acritoptila chiasma*,

NEW SPECIES

Figs. 2, 3, 11, 12

Male.—Antennae 34 segmented. Segment VIII: ventral apico-mesal process

elongate. Segment IX: pleuron with narrow sclerotized process on lateral margin. Tergum X: elaborately sculptured with mesal, blackened tips and elongate ventrolateral rod-like processes (Fig. 3). Inferior appendages: completely fused; membranous caudal lobe with 2 short setae. Subgenital processes: mesal margin bilobed, with inner lobe auriculate; single lateral seta; bilobed process with long lobes. Aedeagus: apex largely membranous with small apical point (Fig. 12).

Female.—Unknown.

Etymology.—Named for the membranous mesal area dividing tergum X into right and left halves.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same as holotype, 26 ♂. Plateau du Dogny, 20 Nov. 1958, 1 ♂.

Diagnosis.—This species is most closely related to the New Caledonian *A. glossocercus* and *A. crinita*. Like those species, it bears a lateral process on pleuron IX. But, the tenth tergum is quite distinctive.

*Acritoptila crinita*,

NEW SPECIES

Figs. 4, 13, 14

Male.—Segment VII: ventral apico-mesal process elongate (AP). Segment VIII: dorsum with lateral fringe of elongate setae (not in illustration). Segment IX: lateral process short, broad, setose. Tergum X: largely membranous except for sclerotized lateral margin and caudolateral process. Inferior appendages: completely fused into rounded structure (ventral view); membranous caudal lobe with two short setae. Subgenital processes: mesally bifid and blackened; two lateral setae; rod-like sclerite connecting lateral lobes of subgenital processes to base of tergum X; bilobed process with short lobes covered with minute setae. Inferior appendages: extensor muscle inserted on lateral lobe of subgenital processes. Aedeagus: apex with several sclerotized processes (Fig. 14).

Female.—Unknown.

Etymology.—Named for long fringe of setae on dorsum VIII.

Holotype.—Male. New Caledonia: headwaters of Honailu River, 26 Oct. 1958, C. R. Joyce.

Paratypes.—None.

Diagnosis.—This species is a sister species of *A. glossocercus*, with nearly identical ventrolateral rod-shaped processes on tergum X (Figs. 4, 7). It may be distinguished from *A. glossocercus* by the rounded fused inferior appendages (Fig. 13), the setose bilobed process (Fig. 13) and the non-dilated caudolateral processes of tergum X (Fig. 4).

*Acritoptila disjuncta*,

NEW SPECIES

Figs. 5, 6, 15, 16

Male.—Antennae 35 segmented. Segment IX: pleuron acutely pointed; venter broadly excised. Tergum X: ventral processes broadened distally with narrow pointed lobe, asymmetrical; remainder of tergum membranous. Inferior appendages: fused and broadly oval in ventral view; membranous mesal lobe with 3 setae at tip and one short seta laterad of base of lobe on each side. Subgenital processes: mesally connected dorsad of inferior appendages and with convergent distal processes; paired caudolateral setae; apices directed ventrally; bilobed process short. Aedeagus: simple, with distal sinuate process.

Female.—Unknown.

Etymology.—Named for the appearance that tergum X is not joined to segment IX.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 5 ♂. New Caledonia, Plaine des Laes area, 3 Nov. 1958, C. R. Joyce.

Diagnosis.—This species is grouped with *chiasma*, *crinita* and *glossocercus* because the males bear an elongate ventrolateral process on tergum X. It differs because its processes are thicker and asymmetrical, and the inferior appendages are broad.

*Acritoptila glossocercus*,

NEW SPECIES

Figs. 7, 17, 18

Male.—Segment VII: ventral apico-mesal process elongate. Segment IX: lateral process of pleuron attenuate, moderate in length. Tergum X: largely membranous, with curved lateral process; elongate ventrolateral rod-shaped processes widened subapically. Inferior appendages: completely fused; tongue-shaped in caudal view; membranous caudal lobe with two short setae. Subgenital processes: mesally heavily



sclerotized and bilobed; one lateral seta; bilobed process with short lobes. Aedeagus: single apical sclerotized process (Fig. 18).

Female.—Unknown.

Etymology.—Named for the tongue-shaped inferior appendages.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—None.

Diagnosis.—A sister species of *A. crinita*, with similar ventrolateral rod-shaped processes on tergum X (Figs. 4, 7), this species may be most easily recognized by the dilated condition of these processes (Fig. 7) and the tongue-shaped inferior appendages (caudal view—Fig. 17)

*Acritoptila planichela*,

NEW SPECIES

Figs. 8, 19, 20

Male.—Segment VII. Apico-mesal process of venter short, acutely pointed. Segment IX: pleuron truncate; venter anteriorly truncate. Tergum X: distally flared with ventral flat, heavily sclerotized, claw-shaped processes. Inferior appendages: fused into broad plate with pair of ventral protuberances and single spine at each lateral margin. Sclerotized subgenital structure ventrad of aedeagus, with narrow sclerotized band connecting it to tergum X. Aedeagus: simple, elongate, lacking titillator (Fig. 20).

Female.—Unknown.

Etymology.—Named for the flat claw of tergum X.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 2 ♂.

Diagnosis.—This is the most divergent of the New Caledonian species of *Acritoptila*. The subgenital structures are difficult to homologize with the subgenital processes of other species of *Acritoptila*. It is the only species in the genus with a short apico-mesal process of venter VII. Relationships with

other New Caledonian *Acritoptila* are unclear.

*Genus Caledonotrichia* Sykora, 1967

*Type species: Caledonotrichia iilesi* Sykora, 1967.

As noted by Wells (1983), males of *Caledonotrichia* closely resemble those of *Maydenoptila* Neboiss. Indeed, if only genitalic characters are analyzed, the two genera could be synonymous. Adult males of *Caledonotrichia* may be distinguished by the paired subgenital processes. In *Maydenoptila*, the subgenital processes are fused or absent. *Caledonotrichia* species have a transverse suture on the mesoscutellum, as do *Maydenoptila* species. In the generic description given by Marshall (1979), the suture was described as absent in *Caledonotrichia*.

*Caledonotrichia charadra*,

NEW SPECIES

Figs. 21–23

Male.—Segment IX: anterior and caudal margins of venter truncate; pleuron sinuate; dorsum a broad band. Subgenital processes: parallel, contiguous, caudally spatulate in ventral view and anteriorly divergent. Membranous sac within segment IX. Inferior appendages: bilobed and attached to dorsolateral margin of segment IX; upper lobe sickle-shaped with blackened, ventrally directed tooth on mesal margin; ventral lobe triangular in shape. Aedeagus: largely membranous with elongate sclerotized process originating at base of aedeagus (Fig. 23).

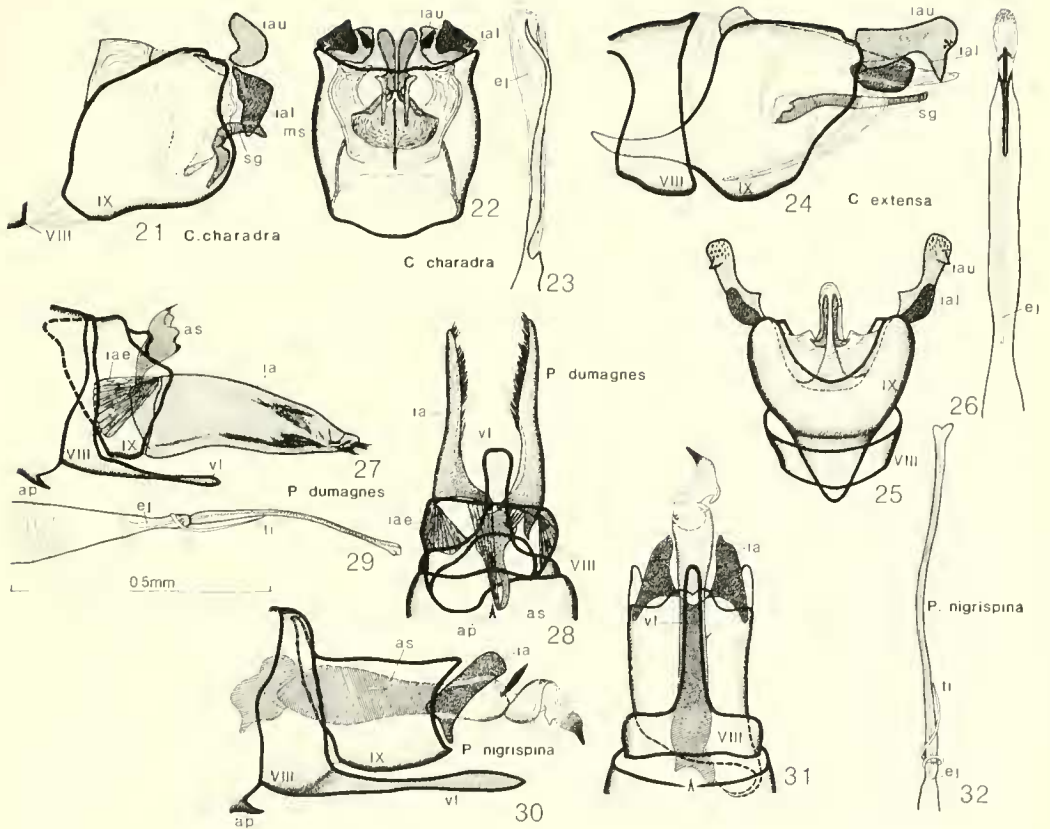
Female.—Unknown.

Etymology.—Named habitat of holotype in mountain stream.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 31 ♂.

Diagnosis.—This species is closely related to *C. minor* Sykora, particularly in the shape of the inferior appendages and ae-



Figs. 21-32. Male terminalia of *Caledonotrichia* Sykora and *Paroxyethira* Mosely. *C. charadra*: 21, lateral; 22, ventral; 23, aedeagus. *C. extensa*: 24, lateral; 25, ventral; 26, aedeagus. *P. dumagnes*: 27, lateral; 28, ventral; 29, aedeagus. *P. nigrispina*: 30, lateral; 31, ventral; 32, aedeagus. ap, apio-mesal process; as, aedeagal sheath; ej, ejaculatory duct; ia, inferior appendages; iae, inferior appendage extensor muscle; ial, inferior appendage lower lobe; iau, inferior appendage upper lobe; ms, membranous sac; sg, subgenital process; ti, titillator; vl, ventral lobe.

deagus. It may be distinguished by the shape of the subgenital processes.

***Caledonotrichia extensa*,**

**NEW SPECIES**

Figs. 24-26

Male.—Antennae 27 segmented. Segment IX: venter protruded anteriorly within segment VIII; caudal margin broadly excised. Subgenital processes: elongate and narrow. Tergum X: elongate, tongue-shaped. Inferior appendages: bilobed; attached to dorsolateral margin of segment IX; dorsal lobe long, with ventrally directed tooth and

peg-like setae at base; ventral lobe broadly oval. Aedeagus: elongate; dorsal crease along most of length; membranous lobe extends distally beyond tip of ejaculatory duct.

Female.—Unknown.

Etymology.—Named for divergent condition of inferior appendages.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 1 ♂.

Diagnosis.—*C. extensa* is distinctive, with the lobes of the inferior appendages longer than wide. It is likely a sister to the distinct

group composed of the other species in the genus.

**Genus *Oxyethira* Eaton, 1873**

Subgenus *Trichoglene* (Neboiss, 1977)

*Type species: Oxyethira albiceps* (MacLachlan, 1862).

Two species of *Oxyethira* from New Caledonia are placed in subgenus *Trichoglene* Neboiss along with the New Zealand *O. albiceps* and the Australian *brevis* Wells, *columba* (Neboiss), *mienica* Wells, *triangulata* Wells and *retracta* Wells. Males of the two new species share with these other species a plesiomorphic character: a complete, non-excised segment VIII, and two apomorphic characters: aedeagus with recurved sub-distal spinous process and subgenital processes widely separated and partly fused with each pleuron of segment IX. Males of *O. caledoniensis* n. sp. are similar to *O. brevis* in having a short titillator, but seem to be more primitive than all Australian and New Zealand species in the retention of a sclerotized mesal connection between the subgenital processes. *O. insularis* n. sp. males are aberrant, with an enlarged forked structure, apparently the modified inferior appendages, on elongate venter IX. The forked structure is like that found in males of the subgenus *Dactylotrichia* Kelley but is probably not homologous.

The type species of *Trichoglene* was incorrectly identified as *O. columba* (Neboiss) in Kelley (1984). It should be *O. albiceps* (MacLachlan). A redescription of the subgenus was given in Kelley (1984).

***Oxyethira caledoniensis*,**

**NEW SPECIES**

Figs. 33, 42, 56

Male.—Segment VIII: cylindrical, without excisions. Segment IX: dorsum narrow in lateral view; venter reaching anterior end of segment VIII. Inferior appendages: reduced to small, widely separated bilobed areas of sclerotization. Subgenital process-

es: widely separated, narrow, connected by thin mesal sclerotized strip; dorsolaterally fused to pleuron IX; bilobed processes short. Aedeagus: titillator short; recurved subdistal process.

Female.—Unknown.

Etymology.—Named for island where holotype was collected.

Holotype.—Male. New Caledonia: Plum, 20–60 m, malaise trap, 23–25 Mar. 1968, J. L. Gressitt & T. C. Maa.

Paratypes.—None.

***Oxyethira insularis*,**

**NEW SPECIES**

Figs. 34, 43, 57

Male.—Length 1.7 mm. Segment VIII: cylindrical, without excisions. Segment IX: dorsum broad; venter elongate, reaching anterior end of segment VII; venter with large forked process, fused inferior appendages, subtending membranous, serrately tipped plate. Subgenital processes: acutely pointed, connected mesally by curved sclerotized band and connected dorsolaterally to pleuron IX; bilobed processes short. Aedeagus: titillator lacking; sclerotized, recurved processes at apex.

Female.—Unknown.

Etymology.—Named for its island habitat.

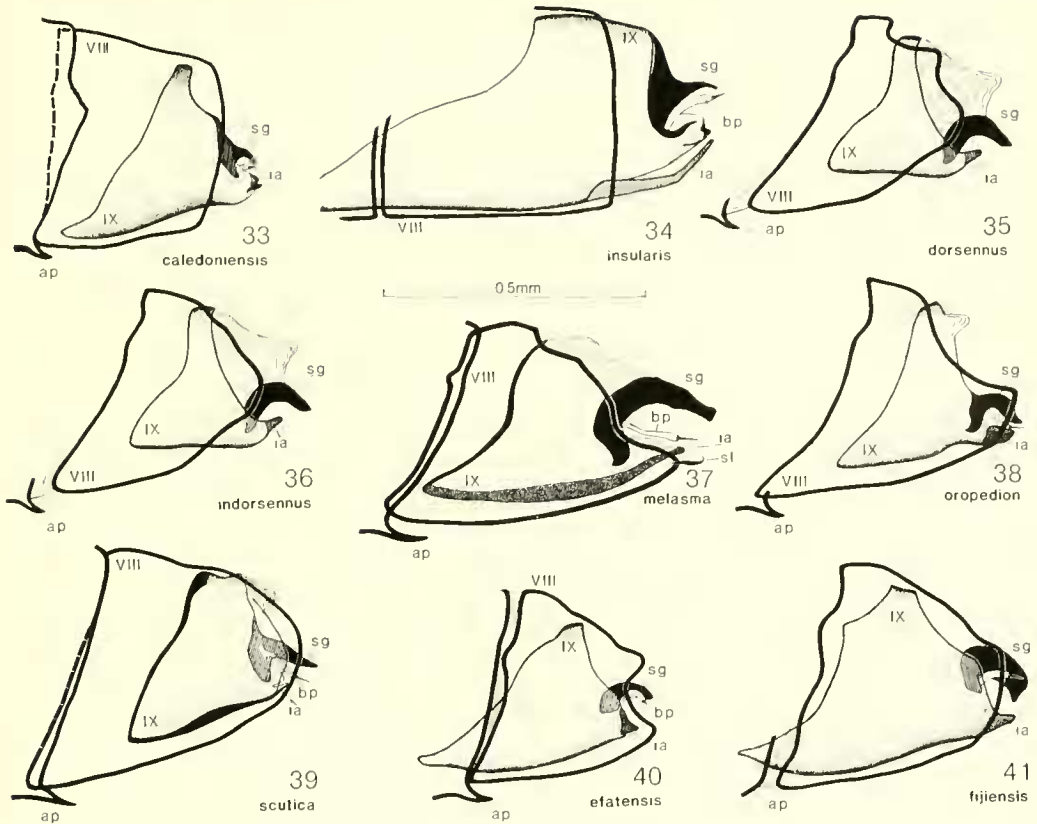
Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 1 ♂.

**Genus *Oxyethira* Eaton, 1873**

Subgenus *Pacificotrichia*, n. subgen.

Seven new species of *Oxyethira* from New Caledonia, Vanuatu and Fiji are arranged here in a new subgenus endemic to the South Pacific islands. Relationships with other subgenera are unclear, although *Pacificotrichia* is most similar to *Dampftrichia* Moseley. Similarities between the males include the shallowly excised venter VIII (Fig. 62), the deeply excised dorsum VIII (Fig. 37), fused  $R_4$  and  $R_5$  forewing veins, configura-



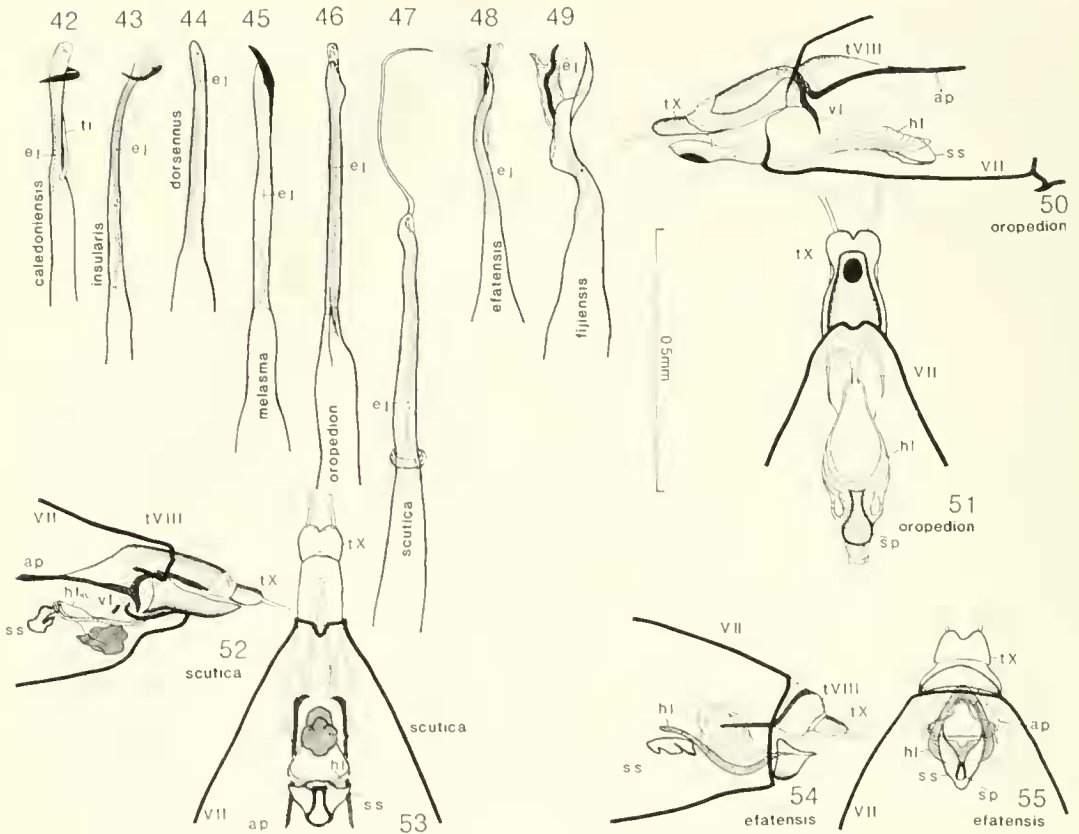
Figs. 33–41. Male terminalia of *Oxyethira* Eaton, lateral views. 33, *O. caledoniensis*. 34, *O. insularis*. 35, *O. dorsennus*. 36, *O. indorsennus*. 37, *O. melasma*. 38, *O. oropedion*. 39, *O. scutica*. 40, *O. efatensis*. 41, *O. fijiensis*. ap, apico-mesal process; bp, bilobed process; ia, inferior appendages; sg, subgenital processes; sl, tapered seta.

tion of the subgenital processes, and reduction or loss of the pre-apical spur on the meso-tibia. The relatively simple male genitalia, with a reduced ninth segment, are like the genitalia of the minima group of subgenus *Dampffitrichia*, the only other known Australasian group of *Oxyethira* besides the endemic subgenus *Trichoglene*. But, there are important differences: unlike males of the minima group, the subgenital processes are distally fused (Fig. 56), do not bear distal setae (Fig. 63) and retain the bilobed process. The lack of significant shared apomorphies prohibit the placement of these species in subgenus *Dampffitrichia*.

Two distinct groups can be identified in subgenus *Pacificotrichia*. The oropedion

group includes species *O. dorsennus* n. sp., *indorsennus* n. sp., *melasma* n. sp., *oropedion* n. sp. and *scutica* n. sp. In males of these species, venter IX does not reach the anterior end of segment VIII (Fig. 35) and the fused subgenital processes bear a pronounced mesodistal projection (Fig. 58). Females are characterized by elongate apodemes (Fig. 50) and cerci (Fig. 53), as well as by a sclerotized lateroventral projection on tergum VIII. The efatensis group includes *O. efatensis* n. sp. and *fijiensis* n. sp. Males of this group are distinguished by venter IX which extends into segment VII (Fig. 40), subgenital processes which are not connected anteromesally (Fig. 63) and an aedeagus with a tapered dorsal sclerotized





Figs. 42-55. Aedeagi and female terminalia of *Oxyethira* Eaton. Figs. 42-49, aedeagi. 42, *O. caledoniensis*. 43, *O. insularis*. 44, *O. dorsennus*. 45, *O. melasma*. 46, *O. oropedion*. 47, *O. scutica*. 48, *O. efatensis*. 49, *O. fijjensis*. Figs. 50-53, female terminalia. *O. oropedion*: 50, lateral; 51, ventral. *O. scutica*: 52, lateral; 53, ventral. *O. efatensis*: 54, lateral; 55, ventral. ap, apodeme IX; ej, ejaculatory duct; hl, horizontal lamella; sp, spermathecal process; ss, spermathecal sclerite; ti, titillator; tX, tergum X; vl, ventral lobe.

process and a membranous ventral tube (Fig. 49). Females bear short apodemes and cerei (Fig. 54).

#### Subgenus *Pacificotrichia*, n. subgen.

*Type species: Oxyethira oropedion*, n. sp.

*Spur formula:* 0-2-4 or 0-3-4.

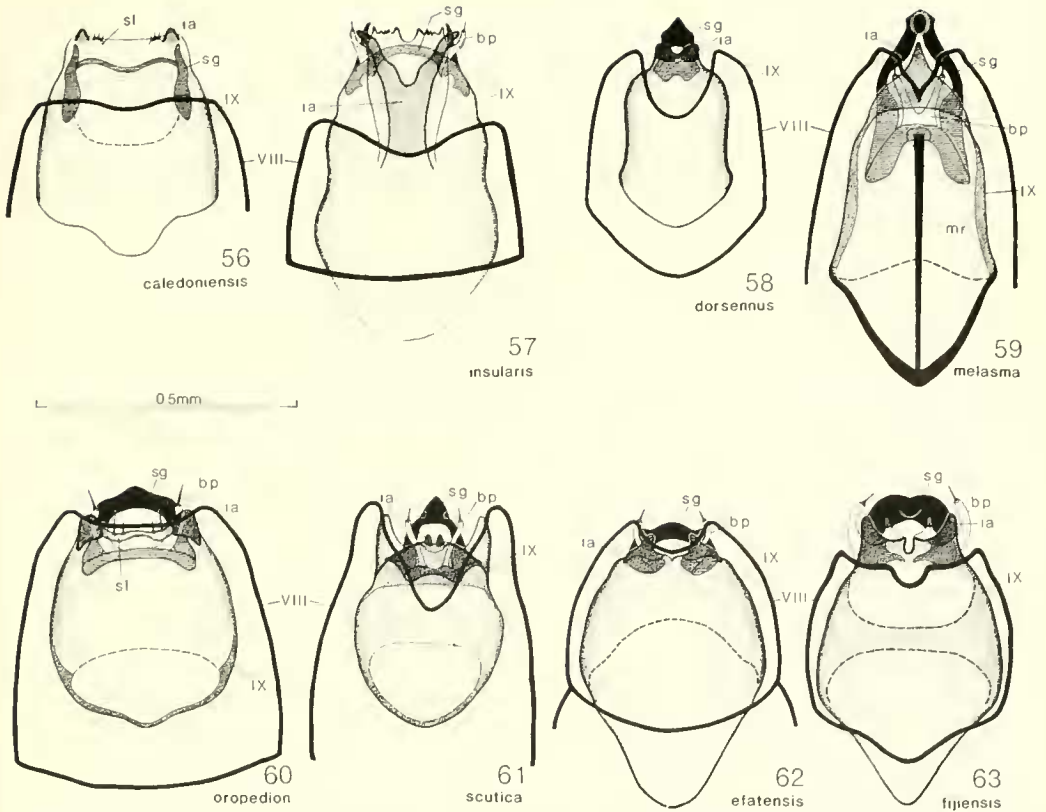
*Forewings:*  $R_1$  and  $R_5$  fused.

**Male.**—Length 2.1-2.4 mm. Antennae 24-30 segmented; sparse placoid sensilla. Segment VIII: venter shallowly excised (Fig. 63); dorsum deeply excised. Segment IX:

dorsum narrow (Fig. 40); posterolateral processes lacking; venter reaching to anterior end of segment VIII or posterior end of segment VII (Figs. 37, 40). Inferior appendages: small or lacking (Fig. 40); setal lobes usually indistinct. Subgenital processes: fused distally (Fig. 63); bilobed process short (Fig. 62). Aedeagus: titillator absent (Fig. 48).

**Female.**—There is too much variability among females to describe subgeneric characters.

**Range.**—New Caledonia; Vanuatu; Fiji.



Figs. 56-63. Male terminalia of *Oxyethira* Eaton, ventral views. 56, *O. caledoniensis*. 57, *O. insularis*. 58, *O. dorsennus*. 59, *O. melasma*. 60, *O. oropedion*. 61, *O. scutica*. 62, *O. efatensis*. 63, *O. fijensis*. bp, bilobed process; ia, inferior appendages; mr, mesal ridge; sg, subgenital processes; sl, setal lobe.

*oropedion* Group  
***Oxyethira dorsennus*,**  
 NEW SPECIES  
 Figs. 35, 44, 58

*Spur formula:* 0-2-4.  
 Male.—Length 2.1 mm. Antennae 25 segmented. Segmented VII: ventral apico-mesal process present. Segment VIII: dorsum with deep excision in lateral view. Inferior appendages: darkened, nearly contiguous mesally. Subgenital processes: triangular fused apex. Aedeagus: lacking distal processes.

Female.—Unknown.  
 Etymology.—Named for the hump on dorsum VIII.  
 Holotype.—Male. New Caledonia:

mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 1 ♂. New Caledonia, Plum, 20-60 m, 23-25 Mar. 1958, 1 ♂.

***Oxyethira indorsennus*,**  
 NEW SPECIES  
 Figs. 36, 44, 58

*Spur formula:* 0-3-4.  
 Male.—Length 2.1 mm. Antennae: 25 segmented. Segment VII: ventral apico-mesal process present. Segment VIII: dorsum gradually excised in lateral view. Inferior appendages: darkened, nearly contiguous mesally. Subgenital processes: triangular fused apex. Aedeagus: lacking distal processes.

Female.—Unknown.

Etymology.—Named for absence of dorsal hump on dorsum VIII.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 5 ♂.

Diagnosis.—This species differs from *O. dorsennus*, n. sp. only in the shape of dorsum VIII (Figs. 35, 36) and the spur formula.

***Oxyethira melasma*,**

**NEW SPECIES**

Figs. 37, 45, 59

*Spur formula*: 0-2-4.

Male.—Antennae: 23–30 segmented. Segment VII: ventral apico-mesal process large. Segment VIII: venter with shallow, acutely pointed excision; setae stout with tapered curved apices. Segment IX: venter with mesal ridge, caudal end tapered to acutely pointed tip; dorsum membranous. Inferior appendages: indistinct; setal lobes lacking. Subgenital processes: with ventral black spot at fused apex; elongate bilobed process with mesally contiguous lobes. Aedeagus: apical sclerotized process.

Female.—Unknown.

Etymology.—Named for the black spot on the subgenital processes.

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 1 ♂. New Caledonia, Honailu River headwaters, 26 Oct. 1958, 1 ♂.

***Oxyethira oropedion*,**

**NEW SPECIES**

Figs. 38, 46, 50, 51, 60

*Spur formula*: 0-3-4.

Male.—Antennae: 26 segmented. Segment VII: ventral apico-mesal process present. Segment VIII: venter not excised; dorsum deeply excised. Inferior appendages: widely separated; setal lobes forming setose

membranous bridge between inferior appendages. Aedeagus: without apical processes.

Female.—Segment VIII: tergum and apodemes elongate; sternum with ventral black spot. Spermathecal sclerite indistinct.

Etymology.—Greek for plateau, the holotype habitat.

Holotype.—Male. New Caledonia: Plateau de Dogny, light trap, 20 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 1 ♂.

Diagnosis.—In ventral aspect, the males are distinguished by the combination of widely separated inferior appendages and broad subgenital processes. The females are easily distinguished by the black spot on sternum VIII.

***Oxyethira scutica*,**

**NEW SPECIES**

Figs. 39, 47, 52, 53, 61

*Spur formula*: 0-2-4.

Male.—Antennae: 26 segmented. Segment VII: ventral apico-mesal process present. Segment VIII: pleuron roundly truncate; venter moderately excised. Inferior appendages: minute contiguous lobes at caudal tip of venter IX; setal lobes lacking. Subgenital processes: with paired black spots bordering caudomesal protrusion; bilobed process with elongate lobes. Aedeagus: narrow elongate process extending from apex.

Female.—Antennae: 20 segmented. Segment VIII: tergum and apodemes elongate. Spermathecal process distinct. Sclerotized sac present caudad of spermathecal process.

Etymology.—Named for the elongate whip-like process of the aedeagus (Fig. 47).

Holotype.—Male. New Caledonia: mountain stream up Boulari River, light trap, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 3 ♂. Same locality as holotype, 17 Nov. 1958, 17 ♂.

Diagnosis.—Males of this species may be recognized by the minute inferior append-

ages and triangular (ventral view) subgenital processes, in addition to the shape of the aedeagal process. *Oxyethira scutica* is the only species of subgenus *Pacificotrichia* with paired black teeth along the posterior fused margin of the subgenital processes. This character is common among species of other neotropical subgenera of *Oxyethira*.

*efatensis* Group

***Oxyethira efatensis*,**

**NEW SPECIES**

Figs. 40, 48, 54, 55, 62

*Spur formula:* 0-3-4.

Male.—Length 2.4 mm. Antennae 26 segmented. Segment VII: ventral apico-mesal process present. Segment VIII: venter and pleuron slightly excised. Inferior appendages: triangular in shape, discrete. Aedeagus: with dorsal, sclerotized, attenuate band subtended by membranous tube (Fig. 48).

Female.—Length 2.4 mm. Antennae 21 segmented. Segment VIII: tergum short with anterior margin heavily sclerotized. Segment IX: lacking. Spermathecal process teardrop-shaped; horizontal lamella distinctly sclerotized.

Etymology.—Named for locality of collection.

Holotype.—Male. Vanuatu: Efate (NW), Maat, Ambryn Village, 3M., 18 Aug. 1957, light trap, J. L. Cressitt.

Paratypes.—Same data as holotype, 4 ♂. Same locality as holotype, 19 Aug. 1957, 5 ♂.

Diagnosis.—This species may be distinguished from *O. fijiensis* n. sp. by the excised pleuron VIII and the median ventral projection of the fused subgenital processes.

***Oxyethira fijiensis*,**

**NEW SPECIES**

Figs. 41, 49, 63

*Spur formula:* 0-3-4.

Male.—Segment VII: ventral apico-mesal process lacking. Segment VIII: venter with small mesal excision; pleuron truncate. Seg-

ment IX: pleuron with dorsolateral point on anterior margin; venter pointed anteriorly. Inferior appendages: small, indistinct, widely separated. Subgenital processes: fused caudal margin with mesal tooth. Aedeagus: one sclerotized blade-like process and one membranous process enclosing ejaculatory duct (Fig. 49).

Female.—Unknown.

Etymology.—Named for collection locality of holotype.

Holotype.—Male. Fiji: Levu, Nandari-vatu, Jan. 1955, N. L. H. Krauss.

Paratypes.—None.

Diagnosis.—This species may be distinguished by the distomesal tooth on the subgenital processes.

**Genus *Paroxyethira* Mosely, 1924**

The two new species of *Paroxyethira* Mosely described here are the first known from this genus outside New Zealand. Both species are similar to previously described species of *Paroxyethira* in the morphology of the terminal abdominal segments as well as wing venation, spur formula and other non-genitalic characters. The genus is characterized by the elongate ventral process of segment VIII (Fig. 30) and the asymmetrical aedeagal sheath in the males (Fig. 30). A description of the genus was given by Marshall (1979).

***Paroxyethira dumagnes***

**NEW SPECIES**

Figs. 27, 29, 31

Male.—Antennae 25 segmented. Segment VII: ventral apico-mesal process present. Segment VIII: length short; venter with elongate spatulate process; pleuron with elongate setae. Segment IX: dorsum asymmetrical and tilted anteriorly; pleuron protruded caudally. Inferior appendages: elongate with numerous black setae on inner margin; extensor muscles originate on anterior pleuron IX and insert on anterolateral corners of inferior appendages. Aedeagus:



sheath short, asymmetrical, with several short setae and a long anterior apodeme; one muscle originates caudally on venter IX and inserts on apex of apodeme, another inserts on caudal end of sheath; aedeagus elongate, with titillator and two distal lobes.

Female.—Unknown.

Etymology.—Named for the inferior appendages, which have black setae which appear like magnetic filings.

Holotype.—Male. New Caledonia: Boulari River, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 2 ♂. Same locality as holotype, 17 Nov. 1958, 165 ♂.

Diagnosis.—*Paroxyethira dumagnes* males have a short aedeagal sheath with an anterior apodeme (Fig. 27) as do males of *P. tillyardi* Mosely. However the apex of the aedeagal sheath is different from all other known species of the genus.

*Paroxyethira nigrispina*,

NEW SPECIES

Figs. 30–32

Male.—Antennae 22 segmented. Segment VII: short ventral apico-mesal process present. Segment VIII: length short; venter with elongate, flattened, gradually tapered process. Segment IX: dorsum excised to anterior margin, asymmetrical; pleuron protruded caudally. Inferior appendages: shorter than segment IX. Aedeagus: sheath elongate, with small spine at midlength and thick spine at base of apical process; apical process sinuate and black at tip; aedeagus elongate with titillator and two distal lobes.

Female.—Unknown.

Etymology.—Named for black tip of aedeagal sheath.

Holotype.—Male. New Caledonia: Boulari River, 3 Nov. 1958, C. R. Joyce.

Paratypes.—Same data as holotype, 86 ♂.

Same locality as holotype, 17 Nov. 1958, 9 ♂.

Diagnosis.—*Paroxyethira nigrispina* males have an elongate aedeagal sheath similar to males of *P. kimminsii* Leader. The apex of the sheath however is distinct.

ACKNOWLEDGMENTS

I am grateful to the Bishop Museum in Hawaii and Alice Wells of the University of Adelaide for the loan of specimens. John Morse of Clemson University and Enwright Laboratories of Greenville, South Carolina were also supportive. This publication is Technical Contribution #2806 of the Clemson University Agricultural Experiment Station.

LITERATURE CITED

- Eaton, A. E. 1873. On the Hydroptilidae, a family of Trichoptera. Trans. Entomol. Soc. London 1873: 125–150.
- Kelley, R. W. 1984. Phylogeny, morphology and classification of the micro-caddisfly genus *Oxyethira* Eaton (Trichoptera: Hydroptilidae). Trans. Amer. Entomol. Soc. 110: 435–463.
- Mac Lachlan, R. 1862. Characters of new species of exotic Trichoptera. Trans. Entomol. Soc. London (3)1: 301–311.
- Marshall, J. E. 1979. A review of the genera of the Hydroptilidae (Trichoptera). Bull. Br. Mus. (Nat. Hist.) Entomol. 39: 135–239.
- Mosely, M. E. 1924. New Zealand Hydroptilidae (Order Trichoptera). Trans. R. Soc. N.Z. 55: 670–673.
- Neboiss, A. 1977. A taxonomic and zoogeographic study of Tasmanian caddis-flies (Insecta: Trichoptera). Mem. Natl. Mus. Victoria 38: 1–208.
- Sykora, J. 1967. Trichoptera collected by Prof. J. Illies in New Guinea and New Caledonia. Pac. Insects 9: 585–595.
- Wells, A. 1982. *Tricholeiochiton* Kloet & Hincks and new genera in the Australian Hydroptilidae (Trichoptera). Aust. J. Zool. 30: 251–270.
- . 1983. New species in the Australian Hydroptilidae (Trichoptera), with observations on relationships and distributions. Aust. J. Zool. 31: 629–649.